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EXAMINER
VU, THONG H

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/811,411	STURM ET AL.
	Examiner	Art Unit	
	Thong H. Vu	2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *10 October 2007*.
2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-20* is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) *1-20* is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a) ☐ All b) ☐ Some * c) ☐ None of:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____.
      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)
1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1.   Claims 1-20 are pending.

Response to Arguments

2.   Applicant's arguments filed 10/10/07 have been fully considered but they are not

persuasive to over come the prior art.

Claims 1 and 17, Applicant argues the prior art does not teach or suggest "micro-

engines capable of executing a plurality of threads that perform forwarding table lookup

operations"

Examiner points out the prior art taught a switch fabric with the packet processing

engine, traffic manager and a plurality of input parallel channels [Sikdar, Fig 5, col 8

lines 1-60]. It's clearly that the processing engine and traffic manger capable of control

the plurality of parallel channels or threads that perform forwarding the packet via the

link lists.

Double Patenting

3.   The nonstatutory double patenting rejection is based on a judicially created doctrine
grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or
improper timewise extension of the "right to exclude" granted by a patent and to prevent possible
harassment by multiple assignees.   A nonstatutory obviousness-type double patenting rejection
is appropriate where the conflicting claims are not identical, but at least one examined
application claim is not patentably distinct from the reference claim(s) because the examined
application claim is either anticipated by, or would have been obvious over, the reference
claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re
Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225
USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re
Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163
USPQ 644 (CCPA 1969).
        A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may
be used to overcome an actual or provisional rejection based on a nonstatutory double patenting
ground provided the conflicting application or patent either is shown to be commonly owned
with this application, or claims an invention made as a result of activities undertaken within the
scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-20 are provisionally rejected on the ground of nonstatutory double patenting over claims 1-24 of copending Application No.10/431,770 ('770). This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

('770) 1. For use in a communication network, a router capable of transmitting data packets to and receiving data packets from N interfacing peripheral devices, said router comprising: a first packet processor capable of receiving a first data packet from a physical medium device (PMD) module coupled to one of said N interfacing peripheral devices and determining if a format of said first data packet is one of IPv4, IPv6 and MPLS, wherein said first packet processor determines a destination device of said first data packet by looking up said destination device in a unified forwarding table containing destination devices for data packets in IPv4 format, IPv6 format, and MPLS format.

(Application) 17. For use in a router comprising a switch fabric and a plurality of routing nodes coupled to the switch fabric, each of the routing nodes capable of transmitting data packets to, and receiving data packets from, external devices and transmitting data packets to, and receiving data packets from, other routing nodes via the switch fabric, a method of distributing data packets for forwarding comprising the steps of: receiving a plurality of data packets in a first network processor of a first routing node, the first network processor comprising N microengines capable of forwarding the data packets, each of the microengines capable of executing a plurality of threads that perform forwarding table lookup operations; allocating a first data packet to a first thread in each of the N microengines; and after said first step of allocating, allocating a second data packet to a second thread in each of the N microengines.

Furthermore, there is no apparent reason why applicant would be prevented from

presenting claims corresponding to those of the instant application in the other

copending application.

Claim Rejections - 35 USC § 102

Claims 1-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Sikdar

[7,154,902 B1].

4.   As per claim 1, Sikdar discloses A router for interconnecting external devices

coupled to said router [Sikdar, a high speed router, abstract], said router comprising:

a switch fabric [Sikdar, switch fabric 80, Fig 2]; and

a plurality of routing nodes coupled to said switch fabric [Sikdar, line card, Fig 10]

wherein each of said plurality of routing nodes comprises packet processing circuitry

capable of transmitting data packets to, and receiving data packets from, said external

devices [Sikdar, a remote scheduler, col 5 lines 4-14] and further capable of transmitting

data packets to, and receiving data packets from, other ones of said plurality of routing

nodes via said switch fabric, wherein said packet processing circuitry [Sikdar, circuitry

60,62,64,66 col 4 lines 57-67] comprises a first network processor comprising:

N micro engines capable of forwarding said data packets, each of said micro

engines capable of executing a plurality of threads that perform forwarding table lookup

operations [Sikdar, routing table look up, coll 4 lines 57-67; N active switch fabric cards

or engines, col 12 lines 50-56; parallel channels, col 8 line 53]; and workload distribution

circuitry capable of distributing data packets to said N micro engines for forwarding

[Sikdar, distribute a 4N-strand switch fabric connection to each backplane, Fig 13-14].

5.   As per claim 2, Sikdar discloses said each micro engine is capable of forwarding

data packets of different traffic types [Sikdar, different drivers 226, col 12 lines 25-30].

6.   As per claim 3, Sikdar discloses said different traffic types comprise IPv4, IPv6

and MPLS [Sikdar, IP address, col 1 line 40; different drivers 226, col 12 lines 25-30].

7.   As per claim 4, Sikdar discloses said first network processor comprises a reader

micro engine for receiving data packets into said first network processor and a writer

micro engine for transmitting said data packets from said first network processor

[Sikdar, ingress and egress manager, Fig 5].

8.   As per claim 5, Sikdar discloses said first network processor transmits data

packets of a first traffic type in the same order that said data packets of said first traffic

type were received [Sikdar, type, col 4 line 52].

9.   As per claim 6, Sikdar discloses said workload distribution circuitry distributes a

data packet to a first thread executed by each of said micro engines before distributing

a data packet to a second thread executed by any of said each micro engines [Sikdar,

threads, col 11 lines 30-40].

10.   As per claim 7, Sikdar discloses said workload distribution circuitry distributes a

data packet to a first thread executed by each of said micro engines according to a

round-robin algorithm [Sikdar, round robin, col 6 line 27].

11.   As per claim 8, Sikdar discloses a second network processor similar to said first

network processor, wherein said first network processor transfers data packets from

said switch fabric to external ports of said router and said second network processor

transfers data packets from said external ports of said router to switch fabric [Sikdar, Fig 2].

12.   As per claim 9 Sikdar discloses A communication network comprising a plurality of routers that communicate data packets to one another and to interfacing external devices, each of said plurality of routers comprising:

a switch fabric [Sikdar, switch fabric 80, Fig 2]; and

a plurality of routing nodes coupled to said switch fabric, wherein each of said plurality of routing nodes comprises packet processing circuitry capable of transmitting data packets to, and receiving data packets from, said external devices and further capable of transmitting data packets to, and receiving data packets from, other ones of said plurality of routing nodes via said switch fabric, wherein said packet processing circuitry [Sikdar, circuitry 60,62,64,66 col 4 lines 57-67] comprises a first network processor comprising:

N micro engines capable of forwarding said data packets, each of said micro engines capable of executing a plurality of threads that perform forwarding table lookup operations [Sikdar, routing table look up, coll 4 lines 57-67; N active switch fabric cards or engines, col 12 lines 50-56]; and workload distribution circuitry capable of distributing data packets to said N micro engines for forwarding [Sikdar, distribute a 4N-strand switch fabric connection to each backplane, Fig 13-14].

13.   Claims 10-16 contain the identical limitations set forth in claims 2-8. Therefore claims 10-16 are rejected for the same rationale set forth in claims 2-8.

Claims 17-20 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the

alternative, under 35 U.S.C. 103(a) as obvious over Sikdar [7,154,902 B1].

14.   As per claim 17 Sikdar discloses For use in a router comprising a switch fabric

and a plurality of routing nodes coupled to the switch fabric, each of the routing nodes

capable of transmitting data packets to, and receiving data packets from, external

devices and transmitting data packets to, and receiving data packets from, other routing

nodes via the switch fabric [Sikdar, a router, switch fabric, Fig 2], a method of

distributing data packets for forwarding comprising the steps of:

receiving a plurality of data packets in a first network processor of a first routing

node, the first network processor comprising N micro engines capable of forwarding the

data packets [Sikdar, N active switch fabric cards or engines, col 12 lines 50-56], each

of the micro engines capable of executing a plurality of threads that perform forwarding

table lookup operations [Sikdar, threads, col 11 lines 30-40; routing table look up, coll 4

lines 57-67];

However Sikdar does not explicitly detail

allocating a **first** data packet to a **first** thread in each of the N micro engines; and

after said first step of allocating, allocating a **second** data packet to a **second** thread in

each of the N micro engines

Sikdar taught the parallel channels [Sikdar, col 8 line 58] with the higher traffic

priority first [Sikdar, col 6 lines 9-31]. It 's clearly that the traffic manager Mi1 and Mi2

allocates or distributes the traffic data corresponding to their priority to process (i.e.

thread) in each of line card or micro engine [Sikdar, col 7 lines 57-67]

Therefore it would have been obvious to an ordinary skill to modify the allocating

a first data packet to a first thread in each of N active switch fabric cards or engines and

second data packet to a second thread in each of the N cards as taught by Sikdar in

order to utilize the higher priority channel. Doing so would provide the efficiency of flow

control.

15.   As per claim 18 Sikdar discloses each of the micro engines is capable of

forwarding data packets of different traffic types [Sikdar, different drivers 226, col 12

lines 25-30].

16.   As per claim 19 Sikdar discloses the different traffic types comprise IPv4, IPv6

and MPLS [Sikdar, different classes, col 5 line 9; different drivers 226, col 12 lines 25-

30].

17.   As per claim 20 Sikdar discloses the steps of transmitting from the first network

processor data packets of a first traffic type in the same order that the data packets of

the first traffic type were received [Sikdar, Fig 2].

Claim Rejections - 35 USC § 102

Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by

Schroder et al [Schroder 7,107,329 B1].

18.   As per claim 1, Schroder discloses A router for interconnecting external devices

coupled to said router, said router comprising:

a switch fabric [Schroder, a single router switch, Fig 2]; and

a plurality of routing nodes coupled to said switch fabric wherein each of said

plurality of routing nodes comprises packet processing circuitry capable of transmitting

data packets to, and receiving data packets from, said external devices and further capable of transmitting data packets to, and receiving data packets from, other ones of said plurality of routing nodes via said switch fabric, wherein said packet processing circuitry comprises a first network processor comprising:

N micro engines capable of forwarding said data packets, each of said micro engines capable of executing a plurality of threads that perform forwarding table lookup operations; and workload distribution circuitry capable of distributing data packets to said N micro engines for forwarding [Schroder, threads being the concurrent lines of execution within a task, col 3 lines 40-50].

19.   As per claim 2, Sikdar discloses said each micro engine is capable of forwarding data packets of different traffic types [Schroder, TCP, UDP, col 4 line 59]

20.   As per claim 3, Sikdar discloses said different traffic types comprise IPv4, IPv6 and MPLS as inherent feature of TCP/IP and BGP

21.   As per claim 4, Sikdar discloses said first network processor comprises a reader micro engine for receiving data packets into said first network processor and a writer micro engine for transmitting said data packets from said first network processor as inherent feature of the software in any router.

22.   As per claim 5, Sikdar discloses said first network processor transmits data packets of a first traffic type in the same order that said data packets of said first traffic type were received [Schroder, TCP, UDP, col 4 line 59].

23. ·   As per claim 6, Sikdar discloses said workload distribution circuitry distributes a data packet to a first thread executed by each of said micro engines before distributing

a data packet to a second thread executed by any of said each micro engines

[Schroder, threads being the concurrent lines of execution within a task, col 3 lines 40-

50].

24.   As per claim 7, Sikdar discloses said workload distribution circuitry distributes a

data packet to a first thread executed by each of said micro engines according to a

round-robin algorithm [Sikdar, round robin, col 6 line 27].

25.   As per claim 8, Sikdar discloses a second network processor similar to said first

network processor, wherein said first network processor transfers data packets from

said switch fabric to external ports of said router and said second network processor

transfers data packets from said external ports of said router to switch fabric [Schroder

Fig 5].

26.   Claims 9-20 contain the identical limitations set forth in claims 1-8. Therefore

claims 9-20 are rejected for the same rationale set forth in claims 1-8.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to *Thong H. Vu* whose telephone number is 571-272-3904. The examiner can normally be reached on 6:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, *Jay Patel* can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Thong Vu
Primary Examiner

THONG VU
PRIMARY PATENT EXAMINER